PROFORMA FOR SYNOPSIS
(CLAUSE 5 OF THE ORDINANCE-45)

1. Title of the thesis : Phytochemical analysis of some medicinal plants of Durg and Kanker District (C.G.) for their antifungal Properties specially against dermatophytes.
2. Introduction
3. A brief review of the work already done in the field.
4. Objectives
5. Noteworthy Contribution In the field of proposed work
6. Proposed Methodology
7. Expected outcome of the proposed work
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Signature of the Supervisor

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18/02/2014

Signature of the Candidate

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PROPOSED SYNOPSIS OF THE PROBLEM FOR Ph. D. DEGREE

SUBJECT	:	BOTANY
FACULTY	:	LIFE SCIENCE
NAME AND ADDRESS OF THE CANDIDATE	:	KU. SWATI TIWARI 55,KADAMBARI NAGAR , DHAMDHA ROAD, DURG, C.G.
NAME , DESIGNATION AND ADDRESS OF	:	Dr. DEEPAK KARKUN (Ph.D.)
SUPERVISOR	:	PRINCIPAL GOVT.V. Y.T. P.G. AUTO. COLLEGE, DURG (C.G.)
PROBLEM	:	PHYTOCHEMICAL ANALYSIS OF SOME MEDICINAL PLANTS OF DURG AND KANKER DISTRICT (C.G.) FOR THEIR ANTIFUNGAL PROPERTIES SPECIALLY AGAINST DERMATOPHYTES.

Phytochemical analysis of some medicinal plants of Durg and Kanker district for their antifungal properties specially against dermatophytes.

INTRODUCTION:-

A number of medicinal plants are gifted by nature to mankind and a notable number of modern drugs have been synthesized from these natural medicinal plants. This natural source has been used to cure various diseases through the world. The globle utilization of medicinal plants as herbal remedies and health care preparation like those, found in ancient literature, as the Vedas and the Bible, has been shown to the importance of natural products with medicinal values. Actually, plants have great diversity of bioactive compounds and it is an indication which makes plants a prosperous source of different types of drugs (Farombi, 2003).

Mostly the worst human diseases are caused by bacteria; significantly the most prevalent pathogenic organisms are virus, bacteria as well as well as fungi and parasitic worms (Ritter et al., 1996). Number of plant metabolites have been extracted and screened against these pathogenic organisms and showed prominent antimicrobial activities *in vitro* as well as *in vivo.*

Plant extracts and phytochemical compounds have been used for antimicrobial properties and have significant therapeutic properties. In recent years, various investigations have been conducted worldwide to confirm such efficiency. Various plants showed antimicrobial properties, which were similar to that of synthetic standard antimicrobial agents. It has been observed that most of the microbes are resistant to antimicrobial drugs that donate morbidity, transience, and amplified healthcare spent (Gums, 2002). A boost in the occurrence of forthcoming infectious diseases is hazard. Extracts and chemical compounds isolated from plants with known antimicrobial activities can be of great impact in the healthcare. Medicinal action of plants is defined to some chemical compounds that impart a specific physiological action on human body (Satish et al. 2008) .

Infectious diseases particularly skin and mucosal infections are common in most of the tribal habitants due to lack of sanitation, potable water and awareness of hygienic food habits (Carceres et al., 1993, Desta , 1993) . Skin diseases like wounds, furuncle, sepsis, atopic dermatitis, cellulities, gas gangrene, acne, candidiasis can be caused by a variety of microbes. Plants produce a diverse range of bioactive molecules, making them rich sources of different types of medicine. Many hundereds of medicinal plant species worldwide are used in the traditional medicine as treatment for skin diseases caused by bacteria and fungi .The search for newer source of antibiotic is a global challenge preoccupying research institutions, since many infectious agents are becoming resistant to synthetic drugs (Lata and Kannabiran , 2006).

Medicinal plants are the nature's gift to human beings to make disease free healthy life. Millions of Indian house holds have been using nearly 8ooo species of medicinal

plants for their healthcare needs since ages. Over one and a half million traditional –healers use a wide range of medicinal plants for treating ailments of both humans and live stock across the length and breadth of the country.

In India different parts of several medicinal plants or their extracts are used for the treatment of various diseases. Several antibiotics used for the treatment of human infections, have limited antimicrobial spectrum. They could develop drug resistance in pathogens and lead to serious ill effect. Hence plants derived antimicrobial agents have received considerable attention in recent years. Several plants have been indicated in folk and other traditional system of medicine as aseptic agents. More than a hundred species of therapeutically important higher plants are listed and described in ancient Indian treatise to have the antimicrobial activity. Efforts are thus directed to identify the plant products which have broad spectrum of antimicrobial property with no ill effects.

A BRIEF REVIEW OF THE WORK ALREADY DONE IN THE FIELD:-

Raina *etal*. (2008), studied potential of some medicinal plants and their extracts in management and treatment of wound. They found that the phytomedicine for wound healing are not only cheap and afforadable but are also safe as hypersensitive reactions are rarely encountered with the use of these agents. These agents induce healing and regeneration of lost tissue by multiple mechanism. They also emphasized the need of scientific validation, standardization, and safety evaluation of these plants before they are recommended for wound healing.

Alma *etal*. (2008) investigated the *In-vitro* antifungal activity and performed phytochemical analysis of leaves of *Gouania javanica* leaves, They reported the presence of secondary metabolites like flavonoids , saponins , triterpenes, glycosides and alkaloids in the leaf extract of the plant . The leaf extract was also reported to be useful in treatment of fungal infection caused by *Aspergillus niger* and *Candida albicans* . This result lends credence to the folkloric use of these plants in treatment of microbial infections and show the potential of *Gouania javanica* in development of new antibiotics.

Bokhari (2009) reported the antifungal activity of some medicinal plants traditionally used in Jeddah, Saudiarbia and supported the traditional use of different extract of these plants in treatment of infections caused by pathogenic fungi. They also suggest that special attention should be paid to there medicinal plants which are having plenty of pharmacological properties that could be used as natural food and feed additives and help in improvement of human and animal health.

Kumar *etal*. (2009) analysed the phytochemical constituents and antimicrobial activities of *Aloe Vera* L. against some clinical pathogens and revealed the presence of many secondary metabolites in leaves of *Aloe Vera*, which could be used for treatment of various infections

including skin transmitted infections. This study supports the folklore use of this plant in treating various microbial infections and shows the potential of *Aloe Vera* and source of new antimicrobial agents.

Jagtap *etal* (2010) studied the antimicrobial activity of some crude herbal drugs viz- *cryptolepis buchanani,* roots of *curcutigo orchiodes*, stem bark of *diospyrous melanoxylon*, leaves of *Kleinia balsamica* ,*P. haliday* and stem bark of *Ougenia oojenensis* , used by Pawara tribes of Nandurbar district for various skin diseases. They tested different concentration of there crude drugs against different Gram +ve and Gram negative bacteria and yeast using agar diffusion method and observed that higher concentration of (60 and 80mg/l) drugs exhibited considerable antimicrobial activity in comparison to lower concentration of 20 and 40 mg/l .

Vinayaka *etal.* (2010) observed the antifungal and free radical scavenging activity of methanolic extract of leaves of *Croton gibsonianus* and concluded that leaves extracts could be used in the treatment of bacterial and fungal infection as well as free radicals caused damages. The leaves show this activity due to presence of various phytochemicals in them.

Kapoor Shweta and Saraf Swarnlata (2011) worked on Topical Herbal therapies on alternative and complementary choice to combat Acne" and revealed that our traditional heritage is hiding number of miraculous herbs which are safe and effective alternate to cure Acne.

Shridhar *etal.* (2011) studied "antimicrobial activity, physicochemical and analysis of *Wrightia tinctoria.*" and found that leaves extract of *W.tinctoria* possessed potent antimicrobial properties against bacteria and dermatophytic fungi. In particular methanol and ethanol extracts were found active against bacteria and hexane extract was found active against dermatophytic fungi, suggesting that the active principles may be useful in the topical treatment of superficial skin infections.

Sule *etal.* (2011) have studied on "phytochemical properties and in vitro antifungal activity of *Senna alata* linn, crude stem bark extract " and showed that the crude extract of the stem bark of *Senna alata* L. exhibited marked antifungal effect on *microsporum canis* ,*Trichophyton Verrucosum* , *Trichophyton mentagrophytes* and *Epidermophyton floccosum* .

Pawar B. T. (2011) studied the antifungal activity of some stem extracts against seed borne pathogenic fungi. Stem extracts of 9 plants were screened against 5 seed borne pathogenic fungi viz. *Alternaria atternata* , *Aspergillus niger, carvularia lunata, Fusarium moniliforme* and *Trichoderma viride*. Out of 9 stem extracts, the extract of *Azadirachta indica* showed maximum activity, while minimum activity was observed with *callistemon rigidus* against the fungi under investigation. These plant extracts can possibly be exploited in the management of seed borne pathogenic fungi to prevent biodeterioration of seeds in an eco-friendly way.

Ramasubramania R. R. (2012) studied on "Recent Pharmacognostical, phytochemical and antifungal analysis of *Abutilon indicum*. In disease of Ringworm infection. " and found that

Ethanolic extract of *Abutilon indicum* is effective against the fungus like *Trichophyton rubrum and microsporum canis*. The Ethanolic extract of *Abutilon indicum* showed highest activity of minimum concentration. Thus from the findings, it was concluded that the bioactive principles present in the extracts may be responsible in the treatment of ringworm infection.

OBJECTIVE:

1. To investigate the antifungal activities of some selected topically used traditional herbal drugs occurring in Forest area of Durg / Kanker district.
2. To screen the different plant extracts and the traditional preparations of medicinal plants for *in vitro* antifungal activity.
3. To conduct phytochemical screening of the most active plants.
4. To find out principle bioactivemolecular factor present in the plants responsible for antifungal Property of the plant.

NOTEWORTHY CONTRIBUTION IN THE FIELD OF PROPOSED WORK:-

Ekpo M.A. and Eteem (2009) observed the antimicrobial activity of ethanalic and aqueous extracts of *Sida acuta* on microorganisms from skin infections. It is observed that the the antimicrobial activity obtained from the ethanolic and aqueous extracts of *Sida acuta* on microorganisms can put an end from skin infection. There are various active agents that are inhibitory to microorganism, which are found from the extracts of *Sida acuta.*

Pirzada *etal.* (2009) studied the antifungal activity of crude solvent extract of *Cressa cretica* have been against dermatophytic fungi like *Aspergillus niger, Aspergillus flavus, Paecilomyces varioti, Microsporum gypeseum* and *Trichophyton rubrum* and also determine the present of basic elements like Al,Ca,Cu Fe,Mg,Mn,P,S,and Zn in the plants by atomic absorption spectrophotometry and Uv spectrophotometry. In this study they found that the therapeutic effect of the plant against skin diseases is mainly due to presence of these elements.

Chanda and Baravalia (2010) their work "Novel leads from herbal drugs for infectious skin disease evaluated the antimicrobial activity of different solvent extracts of *Asterocantha longifolia,Daemla extensa, Euphorbia hirta, Euphorbia tirucalli, Morus alba Pithecellobium dulce, Tsrichedesma indicum ,Curcuma amada* and *curcuma longa* against some skin disease causing bacteria and fungi by agar well diffusion method. They found that these plant extract are effective antimicrobial activity against this pathogenic bacteria and fungi.

Sumita Chanda and Y.Baravalia (2010) On "Screening of some plant extract against some skin diseases caused by oxidative stress and micro organisms, evaluated 11 plants for their antioxidant and microbial property against some bacteria and fungi causing skin disease. They concluded that among the 11 plants investigated ,each possess inhibitory activity against at least

one strain of bacteria or fungi studied. The study further justify the extensive use of these herbal drugs by local people for treating various types of skin disease caused by bacteria and fungi. There study also support the use of *E.hirta* and *E.tirucalli* in traditional Indian medicine, showed that methanolic extracts of this plants can be an easily accessible source of natural antioxidant and antimicrobial agents and against dermatological problems.

Shinkafi and Manga (2011) isolated some dermatophytes and screened some selected medicinal plants in the treatment of dermatophytoses. They found anti dermatophytic activities of leaves of five plants viz. *Euphorbia balsamiferous, Mitra carpus scaber, Pergularia tomentosa, Streospermum kunthianum and Holarrhenna floribunda* which are used traditionally in treatment of dermatophytosis caused by four dermatophytes, which were identified upto species level and one up to genus level. They further found that *P.tomentosa* and *M.Scaber* which are use in Nigerian traditional medicine and are more active than the conventional antifungal drug griesofulvin.

Balkumar *etal.* (2012) studied the epidemiology of dermatophytosis in and around Tiruchirapalli, India and concluded that dermatophytosis was more clinically manifested in the age group of 11-20 and 21-30 years and *Tinea S,* was very common in children below 12 years of age. The investigation further revealed the presence of dermatophytic fungi in 78% of samples studied, and *Trichophyton rubrum* was predominant pathogen followed by *T.mentagrophytes.*

PROPOSED METHODOLOGY –

Methodology for the proposed work will constitute following steps :-

1. Collection and identification of plants :-

   A. Selected species of medicinal plants will be collected from various part of Durg and Kanker District.
   B. A Herbarium will be prepared and sent to BSI Kolkata /NBPGR Lucknow or any other institute for identification.
   C. Plant parts collected will be shade dried and powdered & stored for their analysis.

2. Collection and identification of Fungi:-

Dermatophyte fungal samples (Candida *albicans, Microsporum gypseum, Trichophyton mentagrophytes* etc.) will be collected from hospitals and cultured for study. Need based identification and collection of samples may be considered from experts and related institute.

3. Preparation of Extracts :-

Both aqueous and alcoholic extracts will be prepared according to the protocol of (Parihar and Bohra 2002)

4. Test for Antifungal activity of plant extract :-

Poisoned food technique, "which is recommended by Gehlot and Bohra 1998 shall be considered for antifungal activity against the test fungus. Plant/Plant parts with positive result shall be considered for bio molecule identification and separation as per need. Suitable statistical validation shall be applied for inference.

Positive control extract may be considered for chemical characterization. Data obtained for each experimental set shall be verified statistically for inference and conclusion.

5. Phytochemical Analysis :-

A. Preliminary phytochemical analysis : -

The extracts will subject to preliminary phytochemical testing to detect for the presence of different chemical groups of compounds.

B. Specific phytochemical analysis will be done by any latest technique.

SELECTED SPECIES FOR THE EXPERIMENT:-

In the present study we have selected following species of plants.

1. *Argemone mexicana* (Satyanashi) papaveraceae
2. *Cassia tora* (Charota) Caesalpinaceae
3. *Pongamia pinnata* (Karanj) Fabaceae
4. *Solanum nigrum* (Makoy) Solanaceae
5. *Thevetia peruviana* (Kaner) Apocynaceae

AREA SPECIFIED:-

Our area of resource of plants for the present work in district DURG and KANKER of Chhattisgarh, India.

EXPECTED OUTCOME OF PROPOSED WORK:

Our expectation for the present work is as follows:-

1. Antifungal property of plants considered for the experiment will be established.

2. Biomolecule of the successful plant against particular bacteria shall be established.

3. Specific active biomolecule against specific pathogenic fungus, from particular plant will provide basic Information for pharmacologic application.

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To, Ms Swati Tiwari
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Subject : Acceptance Letter

Dear Sir,
Kindly refer to para ticked

✓ 1. I am pleased to inform you that your Research Paper (MSS No. 456a) entitled Ethnomedicinal Importance of Some plants of Udanti Sanctuary of Chhattisgarh, India has been accepted for publication by the editorial board of the Journal 'Advances in Plant Sciences'. It will be published in Volume 26 Number 1 of June / ~~December~~ 2013. Please send the cost of fifty reprints and blocks Rs. 1600-00 + 1400/- before 30/12/2012 by bank draft in favour of Academy of Plant Sciences India, Muzaffarnagar (U.P.). Without the cost of reprints it will be difficult for us to publish the paper.

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